भारतीय मानक
Indian Standard

IS 12623 : 2022

चमड़ा — मवेशियों का नम नीलवर्ण त्वचा — विशिष्टि

(पहला पुनरीक्षण)

Leather — Bovine Wet Blue — Specification

(First Revision)

ICS 59.140.01

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March 2022 **Price Group 4**

Leather, Tanning Material and Allied Products Sectional Committee, CHD 17

NATIONAL FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards after the draft finalized by the Leather, Tanning Material and Allied Products Sectional Committee had been approved by the Chemical Division Council

This standard was formulated to guide the tanners to offer uniform semi-processed hides to traders for converting into finished leather. There is no set procedure followed in leather trade to facilitate the buyer for procuring material at wet stage. However, traditional methods based on experience are followed and the tanners face much difficulty in the procurement of the material. It is all the more necessary as each leather has different requirements at finished stage which vary from one item to another, and requirements also vary for indigenous as well as export purposes.

Chrome tanned bovine hides in wet blue condition are known as wet blue hides. In this condition, it is stored, transported and exported, and serves as an ideal starting material for processing into finished leather. Handling also becomes easy and tidy.

Considerable amount of trading takes place in our country for such types of material in wet blue condition for the reason that the quality of the hides can easily be assessed at wet blue stage than at the salted condition. The transportation also becomes easy and economical. Hence, it was found necessary to formulate a specification for facilitating the trade. The specification is based on information available with the Indian bovine industry.

The first revision of this standard has been undertaken to harmonize with the latest ISO standard ISO 5433 : 2013. The Committee decided not to adopt the ISO standard identically because there is additional content in the Indian Standard, hence this revision can be considered a technically modified adoption of ISO 5433.

The major changes in this revision are:

a) Substituted the previous title with the ISO title;
b) Scope expanded to include both buffalo and cattle;
c) References revised;
d) Terminology revised; and
e) New requirements added and existing requirements revised.

This first revision of IS 12623 will supersede its earlier version, that is, IS 12623 : 1989 as well as IS 8121 : 1987 ‘Specification for chromed buff calf skin in wet-blue condition’ because buffalo and cattle have been combined in this standard as ‘bovine’.

The composition of the committee responsible for formulation of this standard is given at Annex C.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 1960 ‘Rules for rounding off numerical values (*revised*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

LEATHER — BOVINE WET BLUE — SPECIFICATION

(First Revision)

1 SCOPE

This Indian Standard specifies requirements, methods of sampling and methods of test for wet blue leather produced from bovine hides and parts of bovine hides tanned without hair and with the use of basic chromium sulfate as the primary tanning agent.

2 REFERENCES

The standards listed below contain provisions which through reference in this text constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreement based on this Indian Standard are encouraged to investigate the possibility of applying the most recent editions of the Indian Standards indicated below:

IS No.	*Title*
582 : 1970	Methods of chemical testing of leather (*first revision*)
582 (Part 1) : 2017	Methods of chemical testing of leather: Part 1 Determination of volatile matter (*second revision*)
1640 : 2007	Glossary of terms relating to hides, skins and leather (*first revision*)
5868 : 1983	Method of sampling for leather (*first revision*)
5914 : 1970	Methods of physical testing of leather
582 (Part 9) : 2022/ ISO 4045 : 2018	Leather — Chemical tests — Determination of *p*H
582 (Part 10/Sec 1) : 2022/ISO 5398-1 : 2018	Leather — Chemical determination of chromic oxide content: Part 1 Quantification by titration
16296 (Part 2) : 2014	Leather — Chemical determination of chromic oxide content: Part 2 Quantification by colorimetric determination
I582 (Part 10/Sec 3) : 2022/ISO 5398-3 : 2018	Leather — Chemical determination of chromic oxide content: Part 3 Quantification by atomic absorption spectrometry
582 (Part 10/Sec 4) : 2022/ISO 5398-4 : 2018	Leather — Chemical determination of chromic oxide content: Part 4 Quantification by inductively coupled plasma — Optical emission spectrometer (ICP-OES)

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 1640 and the following shall apply:

3.1 Pigmentation — Colouration produced by fungi growing on wet blue chrome leather.

NOTE — The colouration produced by fungi will normally be black, white, green or yellow but can also be pink or violet.

3.2 Dosset — Double back part of the hide remaining after the belly has been removed.

3.3 Culatta — Rear part of the bovine hide, comprising the butt, the belly middles and the hind shanks.

3.4 Front — Fore part of the bovine hide, consisting of the shoulders and fore shanks.

4 REQUIREMENTS

4.1 Raw Material

Bovine wet blue hides shall be processed from cured or fresh hides or part hides.

4.2 Form and Trimming

4.2.1 Bovine wet blue hide shall be in one or more of the following forms, as specified by the purchaser:

a) whole hides;
b) bellies;
c) dossets (double backs);
d) shoulders;
e) butts;

f) sides;
g) culattas; and
h) fronts.

4.2.2 The trim shall be as agreed between the supplier and purchaser.

4.3 Tanning

After pretanning operations, bovine hides or part hides shall be tanned with basic chromium sulfate as the primary tanning agent. The cut cross-section shall be such that the hide is completely penetrated by the bluish colour of the chromium sulfate when examined visually. Tanning shall be carried out at a *p*H of 3.0 or above.

4.4 Fungicidal Additives

4.4.1 Fungicides shall be used to inhibit mould growths in bovine wet blue leather. Fungicides used to inhibit mould growth and pigmentation should be effective and should not cause a health hazard. The types of fungicide used and their dosage should preferably be agreed between the purchaser and the supplier.

NOTES

1 The use of 0.05 percent fungicide on dry weight is recommended.

2 Fungicides should preferably be applied in quantities appropriate to ensure storage for up to 4 months at the temperature and humidity prevailing during storage or transportation.

3 Restricted chemicals shall be avoided.

4.4.2 The material shall show no mould growth and pigmentation when examined under the binocular microscope at a magnification of 30X after subjecting it to the test prescribed in Annex A.

4.5 Presentation

Bovine wet blue leather shall be well fleshed, and the grain side shall be free from hair, including short hair and fine hair. The size and grading shall be as agreed between the interested parties. The wet blue leather should preferably have a tight grain and be free from creases, drum folds and stains caused by iron salts. At least 95 percent of the number of pieces in a lot shall be free from stains caused by chromium salts, and the aggregate of the stained area in any one piece shall not exceed 10 percent of the total area of the piece.

4.6 Physical Requirements

Bovine wet blue shall comply with the physical requirements given in Table 1.

Table 1 Physical requirements of bovine wet blue

(*Clause* 4.6)

Characteristic	Requirement	Test Method
Moisture content, percent by mass	40-50 percent or as agreed between interested parties	LC:2 of IS 582
Hide substance, percent by mass (on dry basis), *Min*	70	LC:5 of IS 582
Shrinkage temperature, *Min*	Low chrome tannage: 85 ºC Full chrome tannage: 100 ºC	LP:10 of IS 5914

4.7 Chemical Requirements

Bovine wet blue shall comply with the chemical requirements given in Table 2.

Table 2 Chemical requirements of bovine wet blue

(*Clause* 4.7)

Characteristic	Requirement	Test method
Volatile matter, percent by mass	As agreed between interested parties	IS 582 (Part 1)
Chromic oxide (as Cr_2O_3), percent by mass (on dry basis), *Min*	Low chrome tannage: 1.0 Full chrome tannage: 3.5	582 (Part 10/Sec 1) : 2022/ISO 5398-1 : 2018 or IS 16296 (Part 2)
*p*H of water extract, *Min*	3.5	582 (Part 9) : 2022/ ISO 4045 : 2018

5 SAMPLING

For declaring the conformity of bovine wet blue in a lot to this specification, the scale of sampling and criteria for conformity shall be as given in Annex B.

6 PACKING AND MARKING

6.1 Packaging

Bovine wet blue leathers shall be packaged suitably as agreed between the interested parties so as to preserve their original wet condition.

6.2 Marking

The following particulars shall be marked on each package or on a label attached to the package:

a) the type of material (that is, wet blue bovine skin), and the trade name or brand name, if any;

b) the name and address of the manufacturer;
c) the month and year of the tanning;
d) the number of skins; and
e) any other details desired by the purchaser.

6.3 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

ANNEX A

(*Clause* 4.4.2)

TEST FOR FUNGICIDAL EFFICACY

A-1 OUTLINE OF THE METHOD

A-1.1 Untreated leathers as well as those leathers treated with agents to promote mould resistance are smeared, sprayed or swabbed with mixed spore suspension of species of mould found in tanned leathers and the fungicidal efficacy of such leathers is evaluated.

A-1.2 Conditions prescribed for sampling in this test method correspond to the conditions to which the leathers are subjected in normal storage and transit.

A-2 SAMPLE

A-2.0 The sample shall be treated as follows.

A-2.1 One portion of the sample (A) is kept for seven days at 45 ± 2 °C in an oven with forced air circulation and leached by drumming for three hours in about 30 times their mass of water at 27 ± 2 °C. The leached samples are then drained and blotted.

A-2.2 The second portion (B) of the sample is tested as received.

A-2.3 Cut four strips of 50 × 10 mm test pieces from the treated as well as untreated samples.

A-3 APPARATUS

A-3.1 Containers for Keeping Test Pieces

Any suitable glassware which can be conveniently stoppered, namely, jars, desiccators, glass tanks, etc., with greased covers to preclude loss of water vapour during the test may be used. The vessel may contain water at the bottom or cotton wool or clean sand previously saturated with boiling water. This is done to obtain 100 percent relative humidity at approximately 30 °C.

NOTE — The same vessel shall not be used for simultaneous testing of samples treated with different fungicides.

A-3.2 Incubator

One, capable of maintaining 45 ± 2 °C with forced air circulation and another capable of maintaining 25 ± 2 °C.

A-3.3 Binocular Microscope

Capable of 30X magnification.

A-4 REAGENTS

A-4.1 Standard Mixed Spore Suspension

A standard mixed spore sand suspension comprising of the following species of moulds shall be used.

a) Any three of the following Aspergillus species:
   Aspergillus niger
   Aspergillus flavus
   Aspergillus terreus
   Aspergillus nidulans
   Aspergillus wentii, and
b) Any four of the following Penicillium species:
   Penicillium frequentans
   Penicillium purpurogenum
   Penicillium rubrum
   Penicillium helicium
   Penicillium lapidosum
   Penicillium chrysogenum
   Penicillium spinulosum
c) and, any one of the following other species:
   Paecilomyces variotii
   Mucor mucedo
   Trichoderma viride

With each batch of such a suspension, a list showing the organisms incorporated therein, the source of collection and the date prior to which the culture is to be used shall be furnished.

A-5 PROCEDURE

A-5.1 Dampen the treated test pieces (*see* **A-2.3**) with sufficient water for about five minutes, smear, spray or swab with mixed spore suspension and then subsequently suspend them above a free water surface in a suitable covered vessel as described under **A-3.1**.

A-5.2 Viability Control

Simultaneously, tests shall be carried out with control test pieces of leather not treated with fungicide. If this untreated material fails to show any abundant growth of the test organism, the test shall be considered inconclusive and whole test be repeated.

A-5.3 Incubation

Incubate the test pieces for 30 days at 25 ± 2 °C and 95 to 100 percent relative humidity in the incubator (*see* **A-3.2**), or relative humidity cabinet kept in the dark.

A-5.4 The test pieces shall be examined at frequent intervals at least twice a week under the microscope at 30X and the date of first appearance of mould growth or pigmentation shall be noted.

A-6 ASSESSMENT OF FUNGICIDAL EFFICACY

A-6.1 Presence or absence of mould growth or pigmentation as well as its extent at the end of the incubation period may be assessed visually and indicated in the test report as vigorous (entire surface of test piece covered with mould growth or pigmentation in test period), moderate (three-fourths of the surface of test piece covered with mould growth or pigmentation in test period), very slight (one-quarter of the surface of test piece covered with mould growth or pigmentation in test period), and nil (no mould growth or pigmentation in test period).

A-6.1.1 The test report shall also state the following:

a) The number of samples tested;
b) Nature of the samples tested (A) or (B) (**A-2.1** or **A-2.2**);
c) The date of incubation; and
d) The date of first appearance of mould growth or pigmentation.

ANNEX B

(*Clause* 5)

SAMPLING AND CRITERIA FOR CONFORMITY

B-1 SCALE OF SAMPLING

B-1.1 Lot

All chrome tanned bovine hides in a single consignment, processed from same type of raw materials, shall constitute a lot.

B-1.2 For ascertaining the conformity of bovine hides in a lot, samples shall be tested from each lot separately.

B-1.3 The number of pieces of bovine hides depend on the size of the lot and shall be in accordance with Table B-1.

B-1.3.1 At least 10 percent of the packages of the bovine hides shall be opened and approximately equal number of pieces selected at random from each package so as to constitute the required sample size given in col 2 of Table B-1.

B-2 POSITION OF SAMPLING

The position of sampling for carrying out various tests given in the specification shall be according to IS 5868.

B-3 SAMPLE PREPARATION

Samples shall be prepared by wiping off excess water and keeping wrapped in filter paper for 30 min without applying any extra pressure.

B-4 NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

B-4.1 All the pieces of bovine hides selected in the sample shall be examined for tanning, finish, and trimming. Any piece failing to meet any of these requirements shall be considered as defective.

Table B-1 Number of Pieces of Chrome Tanned Bovine Hides in Wet Blue Condition

(*Clause* B-1.3.1)

Sl No. (1)	No. of Pieces in the Lot (2)	No. of Pieces for Visual Inspection (3)	No. of Pieces for Fungicidal Tests (4)	No. of Pieces for Physical and Chemical Tests (5)
i)	Upto 200	10	3	2
ii)	201 to 400	20	4	3
iii)	401 to 600	30	6	4
iv)	601 to 800	40	7	7
v)	801 to 1 300	50	9	9
vi)	1 301 and above	100	10	10

B-4.1.1 A lot shall be declared as conforming to the requirements of tanning, finish and trimming if all the pieces pass the requirement.

B-4.2 A sub-sample of pieces of bovine hides shall be selected from those pieces examined and found satisfactory in accordance with **B-4.1** and according to col 4 of Table B-1. Each of the pieces of the sub-sample shall be tested for fungicidal efficacy. The lot shall be considered as having satisfied the requirements of this characteristic if none of the pieces tested for this purpose fails to meet the corresponding requirements of the specification.

B-4.3 For moisture content, three independent determinations shall be made for each lot. For all other characteristics given in Table 1 and 2, two tests shall be carried out. The lot shall be considered to have met these requirements if all the pieces tested for this purpose comply with the requirements given in Table 1 and 2.

NOTE — The number of pieces required in **B-4.3** may be selected from those already tested and found satisfactory according to **B-4.1** and **B-4.2**.

B-4.4 The lot shall be declared as conforming to the requirements of this specification if the requirements of **B-4.1**, **B-4.2** and **B-4.3** are satisfied.

ANNEX C

(*Foreword*)

COMMITTEE COMPOSITION

Leather, Tanning Material and Allied Products Sectional Committee, CHD 17

Organization	*Representative(s)*
Central Leather Research Institute, Chennai	Dr K. J. Sreeram (***Chairman***) Dr C. Muralidharan (*Alternate*)
A T C Chemicals India Private Limited, Chennai	Shri Subbarayan Govardhanan (*Alternate*)
A V Thomas Leather & Allied Products Private Limited, Chennai	Shri D. Raja Babu Shri V. Ranganathan (*Alternate*)
All India Skins & Hide Tanners and Merchants Association, Chennai	Shri Mohan M. Sreenivas Shri S. Mohammed Hassan (*Alternate*)
Bata India Limited, Bihar	Nomination Awaited
Central Footwear Training Institute, Chennai	Shri K. Murali
Central Pollution Control Board, Delhi	Shri N. K. Gupta
Council of Leather Exports, Chennai	Shri K. Srinivasan
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FDDI, Chennai	Shri Ezhil Arasu Shri Vikas Verma (*Alternate*)
Govt College of Engg and Leather Technology, Kolkata	Dr Sanjoy Chakraborty Dr Goutam Mukherjee (*Alternate*)
In personal capacity	Shri N. R. Jaganathan
In personal capacity	Dr S. Sadulla
In personal capacity	Shri Ganesh Jeevan (*Alternate*)
Indian Finished Leather Manufacturers & Exporters Association, Chennai	Shri N. Shafeeq Ahmed Shri P. K. Aslam Basha (*Alternate*)
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UP Leather Industry Association, Agra	Shri Imran Siddiqui
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Member Secretary

Ms Preeti Prabha
Scientist 'C' (CHD), BIS

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